

Koch, Kristine

From: Shephard, Burt
Sent: Friday, April 04, 2014 2:49 PM
To: John Toll
Cc: Koch, Kristine
Subject: Comprehensive benthic approach thoughts and recommendations for the FS

John,

Attached is the text of some EPA recommendations for the comprehensive benthic approach in the Portland Harbor FS. The rationale for these recommendations isn't in this message, but I can walk you through it on the phone. Chip and Kristine accepted these recommendations from me before Chip's last day at EPA (yesterday), their edits/suggestions are included in the text below. Take a few minutes to look over, I'll give you a call once I get our Office of Regional Counsel what they need. Shouldn't be too long.

As you requested, here's the summary of our recommendations going forward in the Portland Harbor FS on several parts of the comprehensive benthic approach, along with a clarification question for the LWG and its contractors (John Toll could likely answer most quickly).

1. Use the mean quotients (MQ) derived from the sediment contaminant probable effect concentrations (PEC, described in MacDonald et al. 2000) as a line of evidence in defining areas of unacceptable benthic toxicity potentially subject to remediation. A PEC MQ value at an individual station greater than or equal to 0.70 is indicative of unacceptable benthic toxicity.
2. Do not use mean quotients derived from the sediment contaminant probable effect levels (PEL, described in Smith et al. 1996) as a line of evidence in defining areas of unacceptable benthic toxicity potentially subject to remediation. PEL MQ values do not appear to line up well with other lines of evidence in identifying areas of benthic toxicity at Portland Harbor.
3. Use all individual empirical toxicity Level 3 (severe effect) sediment toxicity tests results as indicative of unacceptable benthic toxicity at a location. The four empirical sediment toxicity test endpoints available for Portland Harbor are survival and biomass reductions of the insect larvae (midge) *Chironomus dilutus* in 10-day toxicity tests, and survival and biomass reductions of the amphipod *Hyaella azteca* in 28 day toxicity tests.
4. Use all individual empirical toxicity Level 2 (moderate effect) sediment toxicity tests results as indicative of unacceptable benthic toxicity at a location of the following three empirical sediment toxicity test endpoints available for Portland Harbor: survival and biomass reductions of the insect larvae (midge) *Chironomus dilutus* in 10-day toxicity tests, and survival reductions of the amphipod *Hyaella azteca* in 28 day toxicity tests.
5. Level 2 biomass reductions observed in 28-day empirical sediment toxicity tests with the amphipod *Hyaella azteca* will only be used as indicative of unacceptable benthic toxicity if at least one other line of evidence at a station also indicates unacceptable levels of benthic toxicity. A station with Level 2 biomass reductions in *Hyaella azteca* should not by itself be indicative of unacceptable levels of benthic toxicity if Level 2 *Hyaella* biomass is the only line of evidence at the station indicative of unacceptable benthic toxicity.

This change in how Level 2 empirical toxicity is recommended to be used in defining benthic toxicity areas in the FS necessitates a question to the LWG regarding how they defined toxicity predictions using the floating percentile model (FPM) in the FS. The question is: "Did the LWG require two Level 2 hits from empirical toxicity test results before the FPM identified a station without empirical sediment toxicity test data as toxic? If so, the maps describing stations defined as toxic to benthic species should be replotted using the new empirical toxicity definitions for Level 2 toxicity described in Bullet #5 above."

Best regards,

Burt Shephard
Risk Evaluation Unit
Office of Environmental Assessment (OEA-095)
U.S. Environmental Protection Agency, Region 10
1200 6th Avenue
Seattle, WA 98101

Telephone: (206) 553-6359

Fax: (206) 553-0119

e-mail: Shephard.Burt@epa.gov

"Facts are stubborn things"

- John Adams